WHAT IS CLAIMED IS:

1. An apparatus including adaptive circuitry for introducing a compensating signal latency related to a signal latency of a data symbol decision circuit, comprising:

a first signal terminal that conveys a pre-decision data signal having a data symbol period associated therewith;

a second signal terminal that conveys an error signal corresponding to a difference between an adaptive signal and a post-decision data signal which corresponds to and follows said pre-decision data signal by a first signal latency;

interpolating mixer circuitry, coupled to said first signal terminal, that receives and mixes an integrated signal and said pre-decision data signal to provide said adaptive signal, wherein said adaptive signal follows said pre-decision data signal by a second signal latency related to said first signal latency;

phase detection circuitry, coupled to said first and second signal terminals and having a selected signal delay, that receives and detects a phase difference between said error signal and said pre-decision data signal to provide a detection signal; and

signal integration circuitry, coupled to said phase detection circuitry and said interpolating mixer circuitry, that receives and integrates said detection signal to provide said integrated signal, wherein said selected signal delay is selected such that said integrated signal has a substantially zero AC signal component.

2. The apparatus of claim 1, wherein said interpolating mixer circuitry comprises:

fractional delay circuitry, coupled to said first signal terminal, that receives and delays said pre-decision data signal to provide a delayed signal corresponding to and following said pre-decision data signal by a fraction of said data symbol period;

signal weighting circuitry, coupled to said first signal terminal and said fractional delay circuitry, that receives said integrated signal and in response thereto receives and weights said pre-decision data signal and said delayed signal to provide first and second weighted signals; and

signal combining circuitry, coupled to said signal weighting circuitry, that receives and combines said first and second weighted signals to provide said adaptive signal.

3. The apparatus of claim 2, wherein said pre-decision data signal and said delayed signal are correlated.

4. The apparatus of claim 2, wherein said signal weighting circuitry comprises:

signal complement circuitry, coupled to said signal integration circuitry, that receives and complements said integrated signal to provide a complement signal;

a first weighting circuit, coupled to said signal integration circuitry and said fractional delay circuitry, that receives said integrated signal and in response thereto receives and weights said delayed signal to provide said first weighted signal; and

a second weighting circuit, coupled to said signal complement circuitry and said first signal terminal, that receives said complement signal and in response thereto receives and weights said pre-decision data signal to provide said second weighted signal.

5. The apparatus of claim 4, wherein:

said integrated signal corresponds to a correlation factor; and

said complement signal corresponds to a difference between a normalized factor and said correlation factor.

6. The apparatus of claim 2, wherein said signal weighting circuitry comprises:

signal complement circuitry, coupled to said signal integration circuitry, that receives and complements said integrated signal to provide a complement signal; and

signal multiplication circuitry, further coupled to said signal complement circuitry, that

multiplies said integrated signal and said delayed signal to provide said first weighted signal, and

multiplies said complement signal and said pre-decision data signal to provide said second weighted signal.

7. The apparatus of claim 6, wherein:

said integrated signal corresponds to a correlation factor; and

said complement signal corresponds to a difference between a normalized factor and said correlation factor.

8. The apparatus of claim 2, wherein said signal combining circuitry comprises signal summing circuitry that sums said first and second weighted signals to provide said adaptive signal.

9. The apparatus of claim 1, wherein said phase detection circuitry comprises:

signal differentiation circuitry, coupled to said first signal terminal and having said selected signal delay, that differentiates and delays said pre-decision signal to provide a resultant signal, wherein respective portions of said resultant signal are delayed relative to corresponding portions of said pre-decision data signal by said selected signal delay; and

signal combining circuitry, coupled to said signal differentiation circuitry and said second signal terminal, that receives and combines said resultant signal and said error signal to provide said detection signal.

10. The apparatus of claim 9, wherein said signal differentiation circuitry comprises high pass filter circuitry that high pass filters and delays said pre-decision signal to produce said resultant signal.

11. The apparatus of claim 10, wherein said signal differentiation circuitry comprises:

a high pass filter circuit that high pass filters said pre-decision signal to produce a high pass filtered signal; and

signal delay circuitry, coupled to said high pass filter circuit, delays said high pass filtered signal to produce said resultant signal.

12. The apparatus of claim 9, wherein said signal combining circuitry comprises signal multiplication circuitry that multiplies said resultant signal and said error signal to provide said detection signal.

13. The apparatus of claim 1, wherein said signal integration circuitry comprises low pass filter circuitry.

14. The apparatus of claim 1, further comprising signal combining circuitry, coupled to said interpolating mixer circuitry and said second signal terminal, that receives and combines said post-decision data signal and said adaptive signal to provide said error signal.

15. An apparatus including adaptive circuitry for introducing a compensating signal latency related to a signal latency of a data symbol decision circuit, comprising:

signal receiving means for receiving

a pre-decision data signal having a data symbol period associated therewith, and

an error signal corresponding to a difference between an adaptive signal and a post-decision data signal which corresponds to and follows said pre-decision data signal by a first signal latency;

interpolating mixer means for receiving and mixing an integrated signal and said pre-decision data signal to generate said adaptive signal, wherein said adaptive signal follows said pre-decision data signal by a second signal latency related to said first signal latency;

phase detector means for detecting a phase difference between said error signal and said pre-decision data signal to generate a detection signal; and

signal integrator means for integrating said detection signal to generate said integrated signal, wherein said selected signal delay is selected such that said integrated signal has a substantially zero AC signal component.

16. The apparatus of claim 15, wherein said interpolating mixer means comprises:

fractional delay means for delaying said pre-decision data signal to generate a delayed signal corresponding to and following said pre-decision data signal by a fraction of said data symbol period;

signal weighting means for weighting said pre-decision data signal and said delayed signal in response to said integrated signal to generate first and second weighted signals; and

signal combiner means for combining said first and second weighted signals to generate said adaptive signal.

17. The apparatus of claim 16, wherein said pre-decision data signal and said delayed signal are correlated.

18. The apparatus of claim 16, wherein said signal weighting means comprises:

signal complementing means for complementing said integrated signal to generate a complement signal;

first weighting means for weighting said delayed signal in response to said integrated signal to generate said first weighted signal; and

second weighting means for weighting said pre-decision data signal in response to said complement signal to generate said second weighted signal.

19. The apparatus of claim 18, wherein:

said integrated signal corresponds to a correlation factor; and

said complement signal corresponds to a difference between a normalized factor and said correlation factor.

20. The apparatus of claim 16, wherein said signal weighting means comprises:

signal complementing means for complementing said integrated signal to generate a complement signal; and

signal multiplier means for

multiplying said integrated signal and said delayed signal to generate said first weighted signal, and

multiplying said complement signal and said pre-decision data signal to generate said second weighted signal.

21. The apparatus of claim 20, wherein:

said integrated signal corresponds to a correlation factor; and

said complement signal corresponds to a difference between a normalized factor and said correlation factor.

22. The apparatus of claim 15, wherein said phase detector means comprises:

signal differentiator means for differentiating and delaying said pre-decision signal to generate a resultant signal, wherein respective portions of said resultant signal are delayed relative to corresponding portions of said pre-decision data signal by said selected signal delay; and

signal combiner means for combining said resultant signal and said error signal to generate said detection signal.

23. The apparatus of claim 15, further comprising signal combiner means for receiving and combining said post-decision data signal and said adaptive signal to generate said error signal.

24. A method for adaptively introducing a compensating signal latency related to a signal latency of a data symbol decision circuit, comprising:

receiving a pre-decision data signal having a data symbol period associated therewith;

receiving an error signal corresponding to a difference between an adaptive signal and a post-decision data signal which corresponds to and follows said pre-decision data signal by a first signal latency;

receiving and mixing an integrated signal and said pre-decision data signal to generate said adaptive signal, wherein said adaptive signal follows said pre-decision data signal by a second signal latency related to said first signal latency;

detecting a phase difference between said error signal and said pre-decision data signal to generate a detection signal; and

integrating said detection signal to generate said integrated signal, wherein said selected signal delay is selected such that said integrated signal has a substantially zero AC signal component.

25. The method of claim 24, wherein said receiving and mixing an integrated signal and said pre-decision data signal to generate said adaptive signal comprises:

delaying said pre-decision data signal to generate a delayed signal corresponding to and following said pre-decision data signal by a fraction of said data symbol period;

weighting said pre-decision data signal and said delayed signal in response to said integrated signal to generate first and second weighted signals; and

combining said first and second weighted signals to generate said adaptive signal.

26. The method of claim 25, wherein said weighting said pre-decision data signal and said delayed signal in response to said integrated signal to generate first and second weighted signals comprises:

complementing said integrated signal to generate a complement signal;

weighting said delayed signal in response to said integrated signal to generate said first weighted signal; and

weighting said pre-decision data signal in response to said complement signal to generate said second weighted signal.

27. The method of claim 26, wherein:

said receiving and integrating said detection signal to generate said integrated signal comprises generating said integrated signal corresponding to a correlation factor; and

said complementing said integrated signal to generate a complement signal comprises generating said complement signal corresponding to a difference between a normalized factor and said correlation factor.

28. The method of claim 25, wherein said weighting said pre-decision data signal and said delayed signal in response to said integrated signal to generate first and second weighted signals comprises:

complementing said integrated signal to generate a complement signal;

multiplying said integrated signal and said delayed signal to generate said first weighted signal; and

multiplying said complement signal and said pre-decision data signal to generate said second weighted signal.

29. The method of claim 28, wherein:

said receiving and integrating said detection signal to generate said integrated signal comprises generating said integrated signal corresponding to a correlation factor; and

said complementing said integrated signal to generate a complement signal comprises generating said complement signal corresponding to a difference between a normalized factor and said correlation factor.

30. The method of claim 24, wherein said detecting a phase difference between said error signal and said pre-decision data signal to generate a detection signal comprises:

differentiating and delaying said pre-decision signal to generate a resultant signal, wherein respective portions of said resultant signal are delayed relative to corresponding portions of said pre-decision data signal by said selected signal delay; and

combining said resultant signal and said error signal to generate said detection signal.

31. The method of claim 24, further comprising combining said post-decision data signal and said adaptive signal to generate said error signal.